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SEQUENCE LISTING

5 <110> Ono, Toshiro
Nakayama, Michi

10 <120> CANCER ASSOCIATED ANTIGENS AND USES
THEREFOR

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<141> 2000-04-26

20 <150> US 60/168,353
<151> 1999-12-01

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caagaagcgc agaacaggct gcattggggc caaacacaga atcagcaagg aggaggccat 480
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35 40 45
Lys Ala Arg Tyr Thr Val Arg Ser Phe Gly Ile Arg Arg Asn Glu Lys
50 55 60
Ile Ala Val His Cys Thr Val Arg Gly Ala Lys Ala Glu Glu Ile Leu
65 70 75 80
Glu Lys Gly Leu Lys Val Arg Glu Tyr Glu Leu Arg Lys Asn Asn Phe
85 90 95
55 Ser Asp Thr Gly Asn Phe Gly Phe Gly Ile Gln Glu His Ile Asp Leu
100 105 110
Gly Ile Lys Tyr Asp Pro Ser Ile Gly Ile Tyr Gly Leu Asp Phe Tyr
115 120 125
60 Val Val Leu Gly Arg Pro Gly Phe Ser Ile Ala Asp Lys Lys Arg Arg
130 135 140
Thr Gly Cys Ile Gly Ala Lys His Arg Ile Ser Lys Glu Glu Ala Met
145 150 155 160

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TECH CENTER 1600/2900

Arg Trp Phe Gln Gln Lys Tyr Asp Gly Ile Ile Leu Pro Gly Lys
165 170 175

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35 40 45
Ser Thr His Gly Lys Phe Asn Gly Thr Val Lys Ala Glu Asn Gly Lys
45 50 55 60
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Thr Asn Ile Lys Trp Gly Glu Ala Gly Ala Glu Tyr Val Val Glu Ser
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100 105 110
Gly Ala Lys Arg Val Ile Ile Ser Ala Pro Ser Ala Asp Ala Pro Met
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Phe Val Met Gly Val Asn His Glu Lys Tyr Asp Asn Ser Leu Lys Ile
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Val Ser Asn Ala Ser Cys Thr Thr Asn Cys Leu Ala Pro Leu Ala Lys
145 150 155 160
Val Ile His Asp Asn Phe Gly Ile Val Glu Gly Leu Met Thr Thr Val
165 170 175
60 His Ala Ile Thr Ala Thr Gln Lys Thr Val Asp Gly Pro Ser Gly Lys
180 185 190
Leu Trp Arg Asp Gly Arg Gly Ala Ala Gln Asn Ile Ile Pro Ala Ser

195 200 205
 Thr Gly Ala Ala Lys Ala Val Gly Lys Val Ile Pro Glu Leu Asn Gly
 210 215 220
 Lys Leu Thr Gly Met Ala Phe Arg Val Pro Thr Pro Asn Val Ser Val
 225 230 235 240
 Val Asp Leu Thr Cys Arg Leu Glu Lys Pro Ala Lys Tyr Asp Asp Ile
 245 250 255
 Lys Lys Val Val Lys Gln Ala Ser Glu Gly Pro Leu Lys Gly Ile Leu
 260 265 270
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 275 280 285
 His Ser Ser Thr Phe Asp Ala Gly Ala Gly Ile Ala Leu Asn Asp Asn
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45 20 25 30
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35 40 45
Gly Ile Gly Pro Glu Ile Ser Ala Ser Val Met Lys Ile Phe Asp Ala
50 55 60
50 Ala Lys Ala Pro Ile Gln Trp Glu Glu Arg Asn Val Thr Ala Ile Gln
65 70 75 80
Gly Pro Gly Gly Lys Trp Met Ile Pro Pro Glu Ala Lys Glu Ser Met
85 90 95
55 Asp Lys Asn Lys Met Gly Leu Lys Gly Pro Leu Lys Thr Pro Ile Ala
100 105 110
Ala Gly His Pro Ser Met Asn Leu Leu Leu Arg Lys Thr Phe Asp Leu
115 120 125
Tyr Ala Asn Val Arg Pro Cys Val Ser Ile Glu Gly Tyr Lys Thr Pro
130 135 140
60 Tyr Thr Asp Val Asn Ile Val Thr Ile Arg Glu Asn Thr Glu Gly Glu
145 150 155 160
Tyr Ser Gly Ile Glu His Val Ile Val Asp Gly Val Val Gln Ser Ile

165 170 175
Lys Leu Ile Thr Glu Glu Ala Ser Lys Arg Ile Ala Glu Phe Ala Ser
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Ser Thr Leu Gly Thr Thr Gly Thr Thr Ser Xaa Leu Cys Thr Lys
195 200 205
Ala Asn Ile Met Arg Met Ser Asp Gly Leu Phe Leu Gln Lys Cys Arg
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Glu Ile Cys Gly Arg Thr Val Lys Thr
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20 gcatgtatgt aagcagagg ctttcttcca ggctggagag gggagagatg agcaaggatgc 240
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25 ccagcatcga ctgagggaac tggagtcac tttgcagcgc actaattcct ttgatgtccc 540
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35 40 45
45 Pro Gly Val Gly Ala Val Gly Thr Glu Gly Glu Glu Glu Leu Asn
50 55 60
Gly Gly Lys Gly His Phe Gly Pro Gly Ala Pro Gly Pro Met Gly Asp
65 70 75 80
Gly Asp Lys Asp Ser Gly Thr Arg Ala Gly Gly Val Glu Gln Gln
50 85 90 95
Asn Glu Pro Val Ala Glu Gly Thr Glu Ser Gln Glu Asn Gly Asn Pro
100 105 110
Gly Gly Arg Gln Met Pro Leu Gln Gly Ser Arg Phe Ala Gln His Arg
115 120 125
55 Leu Arg Glu Leu Glu Ser Ile Leu Gln Arg Thr Asn Ser Phe Asp Val
130 135 140
Pro Arg Glu Asp Leu Asp Arg Leu Met Asp Ala Cys Val Ser Arg Val
145 150 155 160
Gln Asn Trp Phe Lys Ile Arg Arg Ala Ala Arg Arg Asp Arg Arg
60 165 170 175
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Arg Phe
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15 <213> Mus musculus

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35 40 45
Glu Asp Thr Leu Leu Phe Pro Glu Gly Gly Gln Pro Asp Asp Arg
25 50 55 60
Gly Thr Ile Asn Asp Ile Ser Val Leu Arg Val Thr Arg Arg Gly Ala
65 70 75 80
Gln Ala Asp His Phe Thr Glu Ser Pro Leu Ser Pro Gly Ser Gln Val
85 90 95
30 Gln Val Arg Val Asp Trp Glu Arg Arg Phe Asp His Met Gln Gln His
100 105 110
Ser Gly Gln His Leu Ile Thr Ala Val Ala Asp Leu Leu Phe Gly Leu
115 120 125
Lys Thr Thr Ser Trp Glu Leu Gly Arg Leu Arg Ser Val Ile Glu Leu
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gtagatggga aggttaggct gtaggaagtg cagaaaaccc ggggccagag gcgggaggtg 1380
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cagcagcagc ccaggttagca gcat 1464

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Leu Ala Pro Gly Phe Leu His Phe Leu Gln Pro Asn Leu Pro Ile Tyr
35 40 45
Leu Leu Gly Leu Thr Gln Lys Leu Gly Pro Ile Tyr Arg Ile Arg Leu
50 55 60
25 Gly Met Gln Asp Val Val Leu Asn Ser Asn Arg Thr Ile Glu Glu
65 70 75 80
Ala Leu Ile Gln Lys Trp Val Asp Phe Ala Gly Arg Pro His Met Leu
85 90 95
C1 30 Asn Gly Lys Met Asp Leu Asp' Leu Ser Leu Gly Asp Tyr Ser Leu Met
100 105 110
Trp Lys Ala His Lys Lys Leu Ser Arg Ser Ala Leu Met Leu Gly Met
115 120 125
Arg Asp Ser Met Glu Pro Leu Ile Glu Gln Leu Thr Gln Glu Phe Cys
130 135 140
35 Glu Arg Met Arg Ala Gln Ala Gly Thr Pro Val Ala Ile His Lys Glu
145 150 155 160
Phe Ser Phe Leu Thr Cys Ser Ile Ile Ser Cys Leu Thr Phe Gly Asp
165 170 175
Lys Asp Ser Thr Leu Val Gln Thr Leu His Asp Cys Val Gln Asp Leu
40 180 185 190
Leu Gln Ala Trp Asn His Trp Ser Ile Gln Ile Leu Thr Ile Ile Pro
195 200 205
Leu Leu Arg Phe Leu Pro Asn Pro Gly Leu Gln Lys Leu Lys Gln Ile
210 215 220
45 Gln Glu Ser Arg Asp His Ile Val Lys Gln Gln Leu Lys Arg His Lys
225 230 235 240
Asp Ser Leu Val Ala Gly Gln Trp Lys Asp Met Ile Asp Tyr Met Leu
245 250 255
50 Gln Gly Val Glu Lys Gln Arg Asp Gly Lys Asp Glu Glu Arg Leu His
260 265 270
Glu Gly His Val His Met Ser Val Val Asp Leu Phe Ile Gly Gly Thr
275 280 285
Glu Thr Thr Ala Thr Thr Leu Ser Trp Ala Val Ala Phe Leu Leu His
290 295 300
55 His Pro Glu Ile Gln Lys Arg Leu Gln Glu Glu Leu Asp Leu Lys Leu
305 310 315 320
Gly Pro Gly Ser Gln Leu Leu Tyr Arg Asn Arg Met Gln Leu Pro Leu
325 330 335
60 Leu Met Ala Thr Ile Ala Glu Val Leu Arg Leu Arg Pro Val Val Pro
340 345 350
Leu Ala Leu Pro His Arg Ala Thr Arg Ala Ser Ser Ile Ser Gly Tyr
355 360 365

Asp Ile Pro Lys Asp Met Val Ile Ile Pro Asn Ile Gln Gly Ala Asn
370 375 380
Leu Asp Glu Met Val Trp Glu Leu Pro Ser Lys Phe Trp Pro Asp Arg
385 390 395 400
5 Phe Leu Glu Pro Gly Lys Asn Pro Arg Thr Pro Ser Phe Gly Cys Gly
405 410 415
Ala Arg Val Cys Leu Gly Glu Pro Leu Ala Arg Leu Glu Leu Phe Val
420 425 430
Val Leu Ala Arg Leu Leu Gln Ala Phe Thr Leu Leu Pro Pro Pro Asp
10 435 440 445
Gly Thr Leu Pro Ser Leu Gln Pro Gln Pro Tyr Ala Gly Ile Asn Leu
450 455 460
Pro Ile Pro Pro Phe Gln Val Arg Leu Gln Pro Arg Asn Leu Ala Pro
465 470 475 480
15 Gln Asp Gln Gly Glu Arg Pro
485

<210> 13
<211> 985
20 <212> DNA
<213> Mus musculus

<400> 13
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25 tggagaggac ggcgcctcctg agggtatggc agagactggg ggaagaggca gcgggaagaa 120
ggaggctggg tc当地caaga gcaccgtgga cgggaagctg gtaaaagctt ctttgctcc 180
aataagctt gccatcaaag ccatgaaaga aggacggta acggtgctag ctgagagcaa 240
gaacgaggag aagaaaaagt ctgggccaac ctctgacaac gaagaggaag atgatgagga 300
agatgggagt tacctgcacc cgtctcttt tgcttccaag aagagcagcc gccttggaga 360
gctgatgaag cccttgaagg tggtgaccc gatcacccct cttagcagccc tttgtcccg 420
aagcacaaag ctgacagctc actcccgaccc caaaaaaaaaat ttgcaagaat gggggcccaag 480
aacgatcaaa gatttattt ctttcagcccc tggcacccag tacaacgcct actacgagtt 540
ttaaagaagc agtttttccct gcagaaaagaa ggaggcggtt gcacacaggg agcatcaaca 600
30 gctgaaaggagg ctccccacaga aaccgctgtt gaagagtcgg gaaagcagct cgccatcaac 660
cagacatgtc cgaaggcggtt aatccagcca ggagctctcc ttccgcataatg aagacatgg 720
35 agtcatgggaa cctctcagcg gcccgtcccg tcctgtatcca gcggtaatgg gaacacgcct 780
ggagctgtcc tttgtattcat tgccccctc cattactgtt ctgagcctat tcatgtcaggc 840
accatctgtc taaaatcact acccaggaat gcttttaac gtcatgtatca catctaaatg 900
40 aggtcactct gccagcctga ggcttcttagg tctgcagagg aaggaagcct tttctctgca 960
gaaaataaaaa aggaccatgt gcaat 985

<210> 14
<211> 180
45 <212> PRT
<213> Mus musculus

<400> 14
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1 5 10 15
50 Ser Gly Glu Ala Gly Glu Asp Gly Ala Pro Glu Gly Met Ala Glu Thr
20 25 30
Gly Gly Arg Gly Ser Gly Lys Lys Glu Ala Gly Ser Ser Lys Ser Thr
35 40 45
55 Val Asp Gly Lys Leu Val Lys Ala Ser Phe Ala Pro Ile Ser Phe Ala
50 55 60
Ile Lys Ala Met Lys Glu Gly Arg Tyr Thr Val Leu Ala Glu Ser Lys
65 70 75 80
Asn Glu Glu Lys Lys Ser Gly Pro Thr Ser Asp Asn Glu Glu Glu
85 90 95
60 Asp Asp Glu Glu Asp Gly Ser Tyr Leu His Pro Ser Leu Phe Ala Ser
100 105 110
Lys Lys Ser Ser Arg Leu Glu Glu Leu Met Lys Pro Leu Lys Val Val

115 120 125
Asp Pro Asp His Pro Leu Ala Ala Leu Cys Pro Glu Ser Thr Lys Leu
130 135 140
5 Thr Ala His Ser Gln Pro His Pro Asn Leu Gln Glu Trp Gly Pro Arg
145 150 155 160
Thr Ile Lys Asp Leu Ile Ser Phe Ser Pro Gly Thr Gln Tyr Asn Ala
165 170 175
Tyr Tyr Glu Phe
180
10
<210> 15
<211> 612
<212> DNA
<213> Mus musculus
15
<220>
<221> Unsure
<222> (77) .. (77)
<223> n = a, c, g, or t
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<400> 15
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tgcccggttc cccacnttgc ctggcgccggc ggccgctca gaccacccta tgccctgagg 120
gaatccggag gagacccggg gctctgcagt ccgccttggc gctcgccag gtgcctggaa 180
25 cagtcacaca ttgtgccgc cagtagtgc acgcaccccc actgacgtta gaggaatcaa 240
ggaccgagtt ctgtatgtct tgaaactcta tgataagatt gatccagaaa agctctccgt 300
aaattctcat ttatgaagg acctgggctt agacagtttgc gaccaagtgg aaattattat 360
ggccatggaa gacgaatttgc ggttggaaat tcctgtatata gatgcagaga agttaatgtg 420
30 tccacaagaa attgttagatt acattgcaga taagaaggat gtgtatgaat aaagtatcc 480
agccttcttc ctcactgtga ggactccaga ggacacacga tggcatctgc gcccactgac 540
agcggctctg ttcaacttgtt atttaatttgc tctgagtgtt ttacccgtta aaaataaattc 600
tattacaaaaa ct 612

<210> 16
35 <211> 86
<212> PRT
<213> Mus musculus

<400> 16
40 Arg Thr Pro Thr Asp Val Arg Gly Ile Lys Asp Arg Val Leu Tyr Val
1 5 10 15
Leu Lys Leu Tyr Asp Lys Ile Asp Pro Glu Lys Leu Ser Val Asn Ser
20 25 30
His Phe Met Lys Asp Leu Gly Leu Asp Ser Leu Asp Gln Val Glu Ile
35 40 45
Ile Met Ala Met Glu Asp Glu Phe Gly Phe Glu Ile Pro Asp Ile Asp
50 55 60
Ala Glu Lys Leu Met Cys Pro Gln Glu Ile Val Asp Tyr Ile Ala Asp
65 70 75 80
50 Lys Lys Asp Val Tyr Glu
85

<210> 17
55 <211> 1036
<212> DNA
<213> Mus musculus

<400> 17
60 ggcacgaggg aggagggggc tgggcctgtt gaccgactgc cagtggaggg gaaagctggc 60
aagtttaagg atgatcccga gaagggggca aggtcttccc gctttactag tgtaaccat 120
gatgcgaagg aagagtgtgg caaggttagaa tcaccccccgtc cagcggatgtc tccggctcgc 180
agagctgagc tctcgaagca gaatggctcc tcggcctctc agatttcttc tgctgaaggc 240

agggcagctg caaaaaggtaa caaacagctt gaggagggaga ggcagaattt accaggagcc
 cttgttctaa acttacaatg aaaccagtca gtcaatttga ctaaagttgt tgattcccttg 360
 tgattatttc catgtaaaaa tggttgtgt caatgacatt taaaaaaaaat catcctctcg 420
 tttagaagg agaaaggggg gaaaggaaac tttctaaatg ctgcttgaga ttgcagtaag 480
 5 aacatacatt ttctaacctg aaagttgaaa ccaaattccac ttgttctgtg gactgtgtct 540
 ctcttacctg ttgtgttag ggttacctt tctgcttaaac tatgtcggga aagaaaaaat 600
 tactttgtt tgcatgtcat gggtaatgg tccctgtaat ttggcagttgg gtgtaaaagc 660
 ttattaaagt tcttctttg ctggaccca gaacaatggc atcatttggg ttttgtctg 720
 10 aaatcggtat accaggtaac tccaaattga tccctgtcat ttgcacaaaa agtattgtgt 780
 ttcagtgttc tcacctgttag aaaactagtt ttcaactagaa atgctcatca gaacacccaa 840
 aaaaaaaacca tcttaatag gaataagggt tataattgtct ttgttacag aatgggtga 900
 ctaaaagagag agaaacaaag cgtggaaat ttaaaaaaaaa aaccacaga gaaacaatgg 960
 taaaaaatga atccaaagag tacgggttag caagtacaaa tcaccttga gaaaacagaa 1020
 actgtcagaa tgggtg 1036

15 <210> 18
 <211> 106
 <212> PRT
 <213> Mus musculus

20 <400> 18
 Gly Thr Arg Glu Glu Gly Ala Gly Pro Val Asp Arg Leu Pro Val Arg
 1 5 10 15
 Gly Lys Ala Gly Lys Phe Lys Asp Asp Pro Glu Lys Gly Ala Arg Ser
 25 20 25 30
 Ser Arg Phe Thr Ser Val Asn His Asp Ala Lys Glu Glu Cys Gly Lys
 35 35 40 45
 Val Glu Ser Pro Pro Ala Ala Arg Cys Ser Ala Arg Arg Ala Glu Leu
 50 50 55 60
 30 Ser Lys Gln Asn Gly Ser Ser Ala Ser Gln Ile Ser Ser Ala Glu Gly
 65 65 70 75 80
 Arg Ala Ala Ala Lys Gly Asn Asn Ser Leu Glu Arg Glu Arg Gln Asn
 85 85 90 95
 Leu Pro Gly Ala Leu Val Leu Asn Leu Gln
 35 100 105

40 <210> 19
 <211> 530
 <212> DNA
 <213> Mus musculus

45 <400> 19
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 ggaaggcagta aaaaagctcc agaatgccac caagctcctg cagaagaaca acctgaacct
 ccttagagac ctgctgtgc acactgccc cagcctcagg agcagccccag cctgggggtgg 60
 50 tgggtcaca ctacacagga aagagggtga ttctgaattc atgaatatca ttgctaata
 gattggatcg gaggagaccc tcctgttctt aactgtgggg gatgagaagg gtgctggct
 cttcttactg gcaggccccgg cagaggctgt ggaaaccctg gggcccaggg tggctgaagt
 cttggaaaggc aaaggagcag ggaagaaggg ccgcttccag ggcacagccca ccaagatgag
 ccgcggggca gagcgcgagg cgcttctgca ggactatgtc agcacacaga gtgctgagga
 gtgagggggcc aggactcgtc ctgtgaccaa cagttaaaat atttgtactc 120

55 <210> 20
 <211> 160
 <212> PRT
 <213> Mus musculus

60 <400> 20
 Ala Arg Gly Ser Glu Lys Ala Leu Thr Ser Leu Leu Lys Cys Gly Val
 1 5 10 15
 Glu Asp His Val Glu Ala Val Lys Lys Leu Gln Asn Ala Thr Lys Leu
 20 25 30

Leu Gln Lys Asn Asn Leu Asn Leu Leu Arg Asp Leu Ala Val His Thr
35 40 45
Ala His Ser Leu Arg Ser Ser Pro Ala Trp Gly Gly Val Val Thr Leu
50 55 60
5 His Arg Lys Glu Gly Asp Ser Glu Phe Met Asn Ile Ile Ala Asn Glu
65 70 75 80
Ile Gly Ser Glu Glu Thr Leu Leu Phe Leu Thr Val Gly Asp Glu Lys
85 90 95
Gly Ala Gly Leu Phe Leu Leu Ala Gly Pro Ala Glu Ala Val Glu Thr
10 100 105 110
Leu Gly Pro Arg Val Ala Glu Val Leu Glu Gly Lys Gly Ala Gly Lys
115 120 125
Lys Gly Arg Phe Gln Gly Lys Ala Thr Lys Met Ser Arg Arg Ala Glu
130 135 140
15 Ala Gln Ala Leu Leu Gln Asp Tyr Val Ser Thr Gln Ser Ala Glu Glu
145 150 155 160

20 <210> 21
<211> 20
<212> DNA
<213> Mus musculus

25 <400> 21
gtggacaaga ggaaggcacaa 20
25 <210> 22
<211> 20
<212> DNA
<213> Mus musculus

C 30 <400> 22
tgaaaagtaa gggctgtcat 20

35 <210> 23
<211> 1895
<212> DNA
<213> Homo sapiens

40 <220>
<221> CDS
<222> (49) ... (1677)

45 <400> 23
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Met Arg Lys
1

50 cca gcc gct ggc ttc ctt ccc tca ctc ctg aag gtg ctg ctc ctg cct 105
Pro Ala Ala Gly Phe Leu Pro Ser Leu Leu Lys Val Leu Leu Pro
5 10 15

55 ctg gca cct gcc gca gcc cag gat tcg act cag gcc ccc act cca ggc 153
Leu Ala Pro Ala Ala Ala Gln Asp Ser Thr Gln Ala Pro Thr Pro Gly
20 25 30 35

60 agc cct ctc tct cct acc gaa tac gaa cgc ttc ttc gca ctg ctg act 201
Ser Pro Leu Ser Pro Thr Glu Tyr Glu Arg Phe Phe Ala Leu Leu Thr
40 45 50

cca acc tgg aag gca gag act acc tgc cgt ctc cgt gca acc cac ggc 249
Pro Thr Trp Lys Ala Glu Thr Thr Cys Arg Leu Arg Ala Thr His Gly

	55	60	65	
5	tgc cgg aat ccc aca ctc gtc cag ctg gac caa tat gaa aac cac ggc Cys Arg Asn Pro Thr Leu Val Gln Leu Asp Gln Tyr Glu Asn His Gly 70 75 80			297
10	tta gtg ccc gat ggt gct gtc tgc tcc aac ctc cct tat gcc tcc tgg Leu Val Pro Asp Gly Ala Val Cys Ser Asn Leu Pro Tyr Ala Ser Trp 85 90 95			345
15	ttt gag tct ttc tgc cag ttc act cac tac cgt tgc tcc aac cac gtc Phe Glu Ser Phe Cys Gln Phe Thr His Tyr Arg Cys Ser Asn His Val 100 105 110 115			393
20	tac tat gcc aag aga gtc ctg tgt tcc cag cca gtc tct att ctc tca Tyr Tyr Ala Lys Arg Val Leu Cys Ser Gln Pro Val Ser Ile Leu Ser 120 125 130			441
25	cct aac act ctc aag gag ata gaa gct tca gct gaa gtc tca ccc acc Pro Asn Thr Leu Lys Glu Ile Glu Ala Ser Ala Glu Val Ser Pro Thr 135 140 145			489
30	acg atg acc tcc ccc atc tca ccc cac ttc aca gtg aca gaa cgc cag Thr Met Thr Ser Pro Ile Ser Pro His Phe Thr Val Thr Glu Arg Gln 150 155 160			537
35	acc ttc cag ccc tgg cct gag agg ctc agc aac gtc gaa gag ctc Thr Phe Gln Pro Trp Pro Glu Arg Leu Ser Asn Asn Val Glu Glu Leu 165 170 175			585
40	cta caa tcc tcc ttg tcc ctg gga ggc cag gag caa gcg cca gag cac Leu Gln Ser Ser Leu Ser Gly Gly Gln Glu Gln Ala Pro Glu His 180 185 190 195			633
45	aag cag gag caa gga gtg gag cac agg cag gag ccg aca caa gaa cac Lys Gln Glu Gln Gly Val Glu His Arg Gln Glu Pro Thr Gln Glu His 200 205 210			681
50	aag cag gaa gag ggg cag aaa cag gaa gag caa gaa gag gaa cag gaa Lys Gln Glu Glu Gly Gln Lys Gln Glu Glu Gln Glu Glu Glu Gln Glu 215 220 225			729
55	gag gag gga aag cag gaa gaa gga cag ggg act aag gag gga cgg gag Glu Glu Gly Lys Gln Glu Glu Gly Gln Gly Thr Lys Glu Gly Arg Glu 230 235 240			777
60	gct gtg tct cag ctg cag aca gac tca gag ccc aag ttt cac tct gaa Ala Val Ser Gln Leu Gln Thr Asp Ser Glu Pro Lys Phe His Ser Glu 245 250 255			825
	tct cta tct tct aac cct tcc tct ttt gct ccc cgg gta cga gaa gta Ser Leu Ser Ser Asn Pro Ser Ser Phe Ala Pro Arg Val Arg Glu Val 260 265 270 275			873
55	gag tct act cct atg ata atg gag aac atc cag gag ctc att cga tca Glu Ser Thr Pro Met Ile Met Glu Asn Ile Gln Glu Leu Ile Arg Ser 280 285 290			921
60	gcc cag gaa ata gat gaa atg aat gaa ata tat gat gag aac tcc tac Ala Gln Glu Ile Asp Glu Met Asn Glu Ile Tyr Asp Glu Asn Ser Tyr 295 300 305			969

	tgg aga aac caa aac cct ggc agc ttc ctg cag ctg ccc cac aca gag Trp Arg Asn Gln Asn Pro Gly Ser Phe Leu Gln Leu Pro His Thr Glu 310 315 320	1017
5	gcc ttg ctg gtg ctg tgc tat tcg atc gtg gag aat acc tgc atc ata Ala Leu Leu Val Leu Cys Tyr Ser Ile Val Glu Asn Thr Cys Ile Ile 325 330 335	1065
10	acc ccc aca gcc aag gcc tgg aag tac atg gag gag gag atc ctt ggt Thr Pro Thr Ala Lys Ala Trp Lys Tyr Met Glu Glu Glu Ile Leu Gly 340 345 350 355	1113
15	ttc ggg aag tcg gtc tgt gac agc ctt ggg cgg cga cac atg tct acc Phe Gly Lys Ser Val Cys Asp Ser Leu Gly Arg Arg His Met Ser Thr 360 365 370	1161
20	tgt gcc ctc tgt gac ttc tgc tcc ttg aag ctg gag cag tgc cac tca Cys Ala Leu Cys Asp Phe Cys Ser Leu Lys Leu Glu Gln Cys His Ser 375 380 385	1209
25	gag gcc agc ctg cag cgg caa caa tgc gac acc tcc cac aag act ccc Glu Ala Ser Leu Gln Arg Gln Gln Cys Asp Thr Ser His Lys Thr Pro 390 395 400	1257
30	C1 gta ggg tcc cca gaa tca ggc cgc ttt tac ggg ctg gat ttg tac ggt Val Gly Ser Pro Glu Ser Gly Arg Phe Tyr Gly Leu Asp Leu Tyr Gly 420 425 430 435	1353
35	ggg ctc cac atg gac ttc tgg tgt gcc cgg ctt gcc acg aaa ggc tgt Gly Leu His Met Asp Phe Trp Cys Ala Arg Leu Ala Thr Lys Gly Cys 440 445 450	1401
40	gaa gat gtc cga gtc tct ggg tgg ctc cag act gag ttc ctt agc ttc Glu Asp Val Arg Val Ser Gly Trp Leu Gln Thr Glu Phe Leu Ser Phe 455 460 465	1449
45	cag gat ggg gat ttc cct acc aag att tgt gac aca gac tat atc cag Gln Asp Gly Asp Phe Pro Thr Lys Ile Cys Asp Thr Asp Tyr Ile Gln 470 475 480	1497
50	tac cca aac tac tgt tcc ttc aaa agc cag cag tgt ctg atg aga aac Tyr Pro Asn Tyr Cys Ser Phe Lys Ser Gln Gln Cys Leu Met Arg Asn 485 490 495	1545
55	cgc aat cgg aag gtg tcc cgc atg aga tgt ctg cag aat gag act tac Arg Asn Arg Lys Val Ser Arg Met Arg Cys Leu Gln Asn Glu Thr Tyr 500 505 510 515	1593
60	agt gcg ctg agc cct ggc aaa agt gag gac gtt gtg ctt cga tgg agc Ser Ala Leu Ser Pro Gly Lys Ser Glu Asp Val Val Leu Arg Trp Ser 520 525 530	1641
	cag gag ttc agc acc ttg act cta ggc cag ttc gga tgagctggcg Gln Glu Phe Ser Thr Leu Thr Leu Gly Gln Phe Gly 535 540	1687
	tctattctgc ccacacccca gccccacctg cccacgttct ctattgtttt gagaccccat tgctttcagg ctgcccccttc tgggtctgtt actcggcccc tactcacatt tccttgggtt	1747 1807

ggagcaacag tcccagagag ggccacggtg ggagctgcgc ctccttaaa agatgactt 1867
acataaaaatg ttgatcttca aaaaaaaaa 1895

5 <210> 24
 <211> 543
 <212> PRT
 <213> Homo sapiens

10 <400> 24
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 1 5 10 15
Leu Leu Pro Leu Ala Pro Ala Ala Gln Asp Ser Thr Gln Ala Pro
 20 25 30
Thr Pro Gly Ser Pro Leu Ser Pro Thr Glu Tyr Glu Arg Phe Phe Ala
 35 40 45
Leu Leu Thr Pro Thr Trp Lys Ala Glu Thr Thr Cys Arg Leu Arg Ala
 50 55 60
Thr His Gly Cys Arg Asn Pro Thr Leu Val Gln Leu Asp Gln Tyr Glu
 65 70 75 80
20 Asn His Gly Leu Val Pro Asp Gly Ala Val Cys Ser Asn Leu Pro Tyr
 85 90 95
Ala Ser Trp Phe Glu Ser Phe Cys Gln Phe Thr His Tyr Arg Cys Ser
 100 105 110
Asn His Val Tyr Tyr Ala Lys Arg Val Leu Cys Ser Gln Pro Val Ser
 115 120 125
25 Ile Leu Ser Pro Asn Thr Leu Lys Glu Ile Glu Ala Ser Ala Glu Val
 130 135 140
Ser Pro Thr Thr Met Thr Ser Pro Ile Ser Pro His Phe Thr Val Thr
 145 150 155 160
30 Glu Arg Gln Thr Phe Gln Pro Trp Pro Glu Arg Leu Ser Asn Asn Val
 165 170 175
Glu Glu Leu Leu Gln Ser Ser Leu Ser Leu Gly Gly Gln Glu Gln Ala
 180 185 190
Pro Glu His Lys Gln Glu Gln Gly Val Glu His Arg Gln Glu Pro Thr
 195 200 205
35 Gln Glu His Lys Gln Glu Gly Gln Lys Gln Glu Glu Gln Glu
 210 215 220
Glu Gln Glu Glu Gly Lys Gln Glu Glu Gly Gln Gly Thr Lys Glu
 225 230 235 240
40 Gly Arg Glu Ala Val Ser Gln Leu Gln Thr Asp Ser Glu Pro Lys Phe
 245 250 255
His Ser Glu Ser Leu Ser Ser Asn Pro Ser Ser Phe Ala Pro Arg Val
 260 265 270
Arg Glu Val Glu Ser Thr Pro Met Ile Met Glu Asn Ile Gln Glu Leu
 275 280 285
45 Ile Arg Ser Ala Gln Glu Ile Asp Glu Met Asn Glu Ile Tyr Asp Glu
 290 295 300
Asn Ser Tyr Trp Arg Asn Gln Asn Pro Gly Ser Phe Leu Gln Leu Pro
 305 310 315 320
50 His Thr Glu Ala Leu Leu Val Leu Cys Tyr Ser Ile Val Glu Asn Thr
 325 330 335
Cys Ile Ile Thr Pro Thr Ala Lys Ala Trp Lys Tyr Met Glu Glu Glu
 340 345 350
55 Ile Leu Gly Phe Gly Lys Ser Val Cys Asp Ser Leu Gly Arg Arg His
 355 360 365
Met Ser Thr Cys Ala Leu Cys Asp Phe Cys Ser Leu Lys Leu Glu Gln
 370 375 380
Cys His Ser Glu Ala Ser Leu Gln Arg Gln Gln Cys Asp Thr Ser His
 385 390 395 400
60 Lys Thr Pro Phe Val Ser Pro Leu Leu Ala Ser Gln Ser Leu Ser Ile
 405 410 415
Gly Asn Gln Val Gly Ser Pro Glu Ser Gly Arg Phe Tyr Gly Leu Asp

420 425 430
Leu Tyr Gly Gly Leu His Met Asp Phe Trp Cys Ala Arg Leu Ala Thr
435 440 445
Lys Gly Cys Glu Asp Val Arg Val Ser Gly Trp Leu Gln Thr Glu Phe
450 455 460
Leu Ser Phe Gln Asp Gly Asp Phe Pro Thr Lys Ile Cys Asp Thr Asp
465 470 475 480
Tyr Ile Gln Tyr Pro Asn Tyr Cys Ser Phe Lys Ser Gln Gln Cys Leu
485 490 495
Met Arg Asn Arg Asn Arg Lys Val Ser Arg Met Arg Cys Leu Gln Asn
500 505 510
Glu Thr Tyr Ser Ala Leu Ser Pro Gly Lys Ser Glu Asp Val Val Leu
515 520 525
Arg Trp Ser Gln Glu Phe Ser Thr Leu Thr Leu Gly Gln Phe Gly
530 535 540

20 <210> 25
<211> 20
<212> DNA
<213> Mus musculus

25 <400> 25
gtggacaaga ggaaggcacaa 20

30 <210> 26
<211> 19
<212> DNA
<213> Homo sapiens

35 <400> 26
tctcccccattc tcactccac 19

40 <210> 27
<211> 20
<212> DNA
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45 <400> 27
aaggacaggg gactaaggag 20
<210> 28
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50 <400> 28
ccgtacaaaat ccagccccgt 20
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<211> 20
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<213> Homo sapiens

55 <400> 29
atgtgagtag gggcccgagta 20
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60 <400> 30

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21

5 <210> 31
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 gcaaaagagg aagggttaga ag

22

15 <210> 32
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15 <400> 32
 ccgtggtttt catattggtc

20